

Case 3633

***Dysactis pallida* Agassiz in Verrill, 1864 (currently *Aiptasia pallida*; Cnidaria, Anthozoa, Hexacorallia, Actiniaria): proposed precedence over *Aiptasia diaphana* (Rapp, 1829), *Aiptasia tagetes* (Duchassaing de Fombressin & Michelotti, 1864), *Aiptasia mimosa* (Duchassaing de Fombressin & Michelotti, 1864) and *Aiptasia inula* (Duchassaing de Fombressin & Michelotti, 1864)**

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Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to conserve the specific name *Aiptasia pallida* (Agassiz in Verrill, 1864) for a species of sea anemone (Cnidaria, Actiniaria) widely used as a model system for dinoflagellate-cnidarian symbiosis and coral bleaching studies. The name *A. diaphana* (Rapp, 1829) is a senior subjective synonym of *A. pallida*, while *Aiptasia inula* (Duchassaing de Fombressin & Michelotti, 1864), *Aiptasia mimosa* (Duchassaing de Fombressin & Michelotti, 1864) and *Aiptasia tagetes* (Duchassaing de Fombressin & Michelotti, 1864) are also synonyms, but published in the same year. The use of the name *A. pallida* meets the requirements for reversal of precedence of a junior synonym (Article 23.9.1) in the case of *A. inula* and *A. mimosa*, which were not used in the 20th century and are declared nomina oblita under Article 23.9.2 in this paper. The names *A. diaphana* and *A. tagetes* were used after 1899; hence the conditions of Article 23.9.1.1 are not met. However, in the interest of nomenclatural stability, we request a ruling to maintain the use of the junior synonym under the plenary power, thereby making *A. pallida* a nomen protectum, and *A. diaphana* and *A. tagetes* nomina oblita.

Keywords. Nomenclature; taxonomy; Actiniaria; *Aiptasia*; *Aiptasia pallida*; *Aiptasia diaphana*; *Aiptasia tagetes*; sea anemone.

1. Sea anemones (Cnidaria, Actiniaria) of the genus *Aiptasia* Gosse, 1858 are conspicuous members of tropical and subtropical shallow-water marine environments worldwide and serve as a model system for studies of cnidarian-dinoflagellate symbiosis. However, despite their importance, accessibility and the fact that publications using *Aiptasia* spp. as focal taxa are common (e.g. Dunn et al., 2002; Muller-Parker & Davy, 2001; Weis et al., 2008; LaJeunesse et al., 2010), to date there has not been a comprehensive systematic analysis of the group.

2. The latest inventory of the genus *Aiptasia* recorded 14 species distributed worldwide (Fautin, 2013); however, most of the descriptions of the 14 species inventoried by Fautin (2013) are incomplete by modern standards and type material is only available in a few cases. The type series of *Aiptasia pallida* (Agassiz in Verrill, 1864, p. 26) consists of two syntypes deposited in the Museum of Comparative Zoology at Harvard University (MCZ: SCOR-1004). There are no types in existence for *A. tagetes* (Duchassaing de Fombressin & Michelotti, 1864, p. 39), *A. mimosa* (Duchassaing de Fombressin & Michelotti, 1864, p. 29), *A. inula* (Duchassaing de Fombressin & Michelotti, 1864, p. 39) or *A. diaphana* (Rapp, 1829, p. 57). There were originally two syntypes of *A. tagetes* from Puerto Rico, one syntype of *A. mimosa* from the Virgin Islands, one syntype of *A. diaphana* from Naples (Italy); however, there is no information available about the museum collections where these types were deposited (Fautin, 2013), and they are thought to have been lost. After detailed morphological examination of available type and newly-collected material and cnidae from all but three of the type localities or nearby localities of the type reported for 11 of the 14 putative species within *Aiptasia*, Grajales & Rodríguez (2013 submitted) did not find any constant morphological character to distinguish between *A. diaphana*, *A. pallida*, *A. inula*, *A. mimosa*, *A. tagetes*, *A. minuta* (Verrill, 1867, p. 50), *A. leiodactyla* Pax, 1910, p. 178, *A. pulchella* Carlgren, 1943, p. 38, and *A. californica* Carlgren, 1952, p. 388. Thus, they proposed to synonymize these eight species. Although there is no type material in existence for *A. inula*, *A. mimosa*, *A. tagetes* or *A. diaphana*, the synonymy was possible based on available descriptions and newly-collected material from nearby localities to the type localities of these species (Grajales & Rodríguez, 2013, submitted).

3. According to the Principle of Priority, the name *Aiptasia diaphana* is the senior subjective synonym and thus must be used over the junior synonym, *A. pallida*. In addition, the names *Dysactis mimosa* (currently *A. mimosa*), *Bartholomea tagetes* (currently *A. tagetes*), and *Bartholomea inula* (currently *A. inula*) might also have priority over the name *A. pallida*. Verrill's (1864) paper was published in July 1864, while Duchassaing de Fombressin & Michelotti's (1864) supplement was published between May 1864 and January 1865 (on page 7 of the supplement Duchassaing de Fombressin & Michelotti included a footnote which is dated 17 May 1864). Duchassaing de Fombressin & Michelotti's paper (1864) has a flyleaf note to say that it is an extract from the *Memoires de l'Academie des Sciences de Turin*, Serie 2, Tome 23. The supplement was indeed republished in the *Memoires de l'Academie des Sciences de Turin*, but only in 1866.

4. *Aiptasia pallida* has been used as a model system for research of dinoflagellate-cnidarian symbiosis and the processes responsible for coral bleaching over more than 30 years (e.g. Hessinger & Lenhoff, 1973; Palinscar et al., 1989; Sawyer & Muscatine, 2001; Rodriguez-Lanetty et al., 2006; Sunagawa et al. 2008, 2009, see Appendix) and thus is currently in wider use than its senior putative synonyms: in the last 50 years the name *A. diaphana* has been used in 25 publications, *A. tagetes* in seven publications, and *A. mimosa* and *A. inula* have not been used, whereas *A. pallida* has been used in at least 50 publications. Furthermore, most of the studies using *A. pallida* are non-taxonomic works which do not always follow formal nomenclature. In the interests of nomenclatural stability and to avoid potential confusion, it would be ideal to maintain the use of the junior synonym by reversal of precedence (Article

23.9 of the Code). The names *A. inula* and *A. mimosa* have not been used as valid names after 1899, thus meeting the conditions of Article 23.9.1.1. They are considered as nomina oblita under Article 23.9.2 of the Code. However, the names *A. diaphana* and *A. tagetes* have been used as valid after 1899 (e.g. Schmidt, 1982; den Hartog & Ocaña, 2003) and so do not meet the conditions of Article 23.9.1.1. Therefore reversal of precedence cannot be automatically granted, although the name *A. pallida* has been the most widely used in the last 50 years. We consider that the use of the senior synonyms *A. diaphana*, *A. inula*, *A. mimosa* and *A. tagetes* would cause confusion and threaten stability and, under Article 23.9.3 of the Code, we request the Commission to use its plenary power to maintain the use of the junior synonym, *A. pallida*. A list of 50 supporting references demonstrating the prevailing usage of *A. pallida* is held by the Commission Secretariat.

5. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to give precedence to the name *pallida* Agassiz in Verrill, 1864, as published in the binomen *Dysactis pallida*, over the following names, whenever they are considered to be synonyms:
 - (a) *diaphana* Rapp, 1829, as published in the binomen *Actinia diaphana*;
 - (b) *tagetes* Duchassaing de Fombressin & Michelotti, 1864, as published in the binomen *Bartholomea tagetes*;
- (2) to place on the Official List of Specific Names in Zoology the following names:
 - (a) *pallida* Agassiz in Verrill, 1864, as published in the binomen *Dysactis pallida*, with the endorsement that it is to be given precedence over the names *diaphana* Rapp, 1829, as published in the binomen *Actinia diaphana*, and *tagetes* Duchassaing de Fombressin & Michelotti, 1864, as published in the binomen *Bartholomea tagetes*, whenever it and either of the other two are considered to be synonyms;
 - (b) *diaphana* Rapp, 1829, as published in the binomen *Actinia diaphana*, with the endorsement that it is not to be given priority over the name *pallida* Agassiz in Verrill, 1864, as published in the binomen *Dysactis pallida*, whenever the two are considered to be synonyms;
 - (c) *tagetes* Duchassaing de Fombressin & Michelotti, 1864, as published in the binomen *Bartholomea tagetes*, with the endorsement that it is not to be given priority over the name *pallida* Agassiz in Verrill, 1864, as published in the binomen *Dysactis pallida*, whenever the two are considered to be synonyms.

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